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Kineo Matsui

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BEYER WEAVER LLP  
P.O. BOX 70250  
OAKLAND, CA 94612-0250

EXAMINER

HENNING, MATTHEW T

ART UNIT

PAPER NUMBER

2131

MAIL DATE

DELIVERY MODE

05/23/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/889,913	<b>Applicant(s)</b> MATSUI, KINEO	
	<b>Examiner</b> MATTHEW T. HENNING	<b>Art Unit</b> 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5 and 7-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5 and 9-20 is/are rejected.
- 7) ☐ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2001 is/are: a) ☒ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

1 This action is in response to the communication filed on 3/10/2008.

2 **DETAILED ACTION**

3 ***Continued Examination Under 37 CFR 1.114***

4 A request for continued examination under 37 CFR 1.114, including the fee set forth in  
5 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is  
6 eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)  
7 has been timely paid, the finality of the previous Office action has been withdrawn pursuant to  
8 37 CFR 1.114. Applicant's submission filed on 3/10/2008 has been entered.

9 ***Response to Arguments***

10 Applicant's arguments filed 3/10/2008 have been fully considered but they are not  
11 persuasive.

12 Regarding applicant's argument that the examiner has relied upon the combination of the  
13 first and third embodiments of Inoue in a manner in which Inoue did not teach or suggest, the  
14 examiner does not find the argument persuasive. The examiner has not relied upon the first  
15 embodiment of Inoue in rejecting the claims, but instead has relied upon the third embodiment,  
16 and the fourth embodiment, which provide for embedding and extracting of the watermark from  
17 the image signal. As such the examiner has not found the argument persuasive.

18 Regarding applicant's argument that Inoue does not compare coefficients between blocks  
19 of the group, the examiner does not find the argument persuasive. As previously stated on page  
20 2 of the office action mailed June 12, 2006, although Inoue does not explicitly state that the  
21 blocks are "compared", Inoue does disclose determining the "mean" of the coefficients of the  
22 blocks, as can be seen in Col. 46 Lines 5-15 as well as Fig 14. Calculating the mean coefficient

1 of a group of blocks is a comparison of all the blocks in order to determine the average  
2 coefficient between the group of blocks, and as such falls within the scope of comparing  
3 coefficients between at least two blocks. This is analogous to finding the average height of the  
4 students of a classroom, in which the heights of the students must be compared in order to  
5 determine the average height. Furthermore, as seen in Col. 46 Lines 16-30, the mean coefficient  
6 is used in the embedding process. Further still, the blocks have a predetermined relationship in  
7 that they are from the same input image. Therefore, the examiner does not find the argument  
8 persuasive.

9       Regarding applicant's argument that comparison is not inevitable in Inoue because the  
10 group size could be one block, the examiner does not find the argument persuasive. Simply  
11 because one example given in Inoue does not meet the claim limitations, does not exclude other  
12 examples from consideration. Fig. 13 of Inoue, and its corresponding text clearly show an  
13 example where four blocks comprise the group, and then the mean DC component between the  
14 four blocks is determined. As discussed above, this is the comparison being relied upon by the  
15 examiner. As such, the examiner does not find the argument persuasive.

16       Again, with regards to applicant's argument that there is no predetermined positional  
17 relationship between the blocks in the groups, the examiner points out that this limitation is not  
18 claimed. In response to applicant's argument that the references fail to show certain features of  
19 applicant's invention, it is noted that the features upon which applicant relies are not recited in  
20 the rejected claim(s). Although the claims are interpreted in light of the specification, limitations  
21 from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26  
22 USPQ2d 1057 (Fed. Cir. 1993). If the applicant would considers this to be a key feature of what

1 the applicant believes to have been invented, this should be added to the claim language.

2 Further, the examiner will consider this limitation when it is added to the claim language.

3 With regards to the applicant's argument that a mean calculations is not a comparison  
4 because it does not determine which elements are greater than or less than the others, the  
5 examiner does not find the argument persuasive. The claim language does not recite the type of  
6 comparison, but rather recites "comparing". If the applicant wishes for the scope of this  
7 limitation to be limited to comparing to determine which of the coefficients is greatest, then the  
8 claim should be amended to properly define the scope as such.

9 All objections and rejections not set forth below have been withdrawn.

10 Claims 1-3, 5, and 7-20 have been examined.

11 ***Response to Amendment***

12 While the amendment to claim 19 is not compliant with 37 CFR 1.121 because the status  
13 identifier is not proper, the examiner has acted on the claims in order to further prosecution of  
14 the case without further increasing the pendency of this application.

15 ***Claim Rejections - 35 USC § 103***

16 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all  
17 obviousness rejections set forth in this Office action:

18 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in  
19 section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are  
20 such that the subject matter as a whole would have been obvious at the time the invention was made to a person  
21 having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the  
22 manner in which the invention was made.

23  
24 Claims 1-3, 13-14, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable  
25 over Inoue et al. (US Patent Number 6,477,276) hereinafter referred to as Inoue.

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1           Regarding claim 1, Inoue disclosed a method of embedding a digital watermark in a  
2   master image (See Inoue Abstract and Figs. 12-14), said embedding method comprising the steps  
3   of: extracting blocks of a predetermined size from said master image (See Inoue Col. 45 Line 66  
4   – Col. 46 Line 2); processing image data corresponding to each block by orthogonal transform  
5   (See Inoue Col. 46 Lines 2-5); comparing orthogonal transformed coefficients between at least  
6   two blocks having a predetermined relationship with each other (See Inoue Col. 46 Lines 5-15)  
7   and making the coefficients satisfy a preset order of magnitude according to bit information  
8   specified as the digital watermark (See Inoue Col. 46 Lines 16-30); quantizing the coefficients  
9   obtained by the orthogonal transform with a quantization table (See Inoue Col. 46 Lines 9-18)  
10   and using the quantized coefficients to embed the bit information (See Inoue Col. 46 Lines 9-39),  
11   and processing each block with the embedded bit information by inverse orthogonal transform,  
12   so as output a resulting image with digital watermark embedded therein (See Inoue Col. 46 Lines  
13   30-39), but failed to specifically disclose wherein embedding the bit information is carried out  
14   when the quantized coefficients of the at least two blocks are not all equal to zero.

15           However, Inoue did disclose determining a mean, or the average, between coefficients  
16   (See Inoue Col. 46 Lines 16-30), which implies that the coefficients have values other than zero.  
17   It would have been obvious to the ordinary person skilled in the art at the time of invention to  
18   have embedded the bit information when the quantized coefficients of the at least two blocks  
19   were not all equal to zero. This would have been obvious because the ordinary person skilled in  
20   the art would have recognized that determining the mean of the quantized coefficients implies  
21   that the coefficients were not all equal to zero. Further, Inoue does not give any indication that  
22   the coefficients would all be equal to zero.

1           Regarding claim 17, Inoue disclosed an apparatus of embedding a digital watermark in a  
2   master image (See Inoue Abstract and Figs. 12-14), said digital watermark embedding apparatus  
3   comprising: block extraction means that extracts blocks of a predetermined size from said master  
4   image (See Inoue Col. 45 Line 66 – Col. 46 Line 2); transformation means that processes image  
5   data corresponding to each block by orthogonal transform (See Inoue Col. 46 Lines 2-5); bit  
6   information embedding means that compares orthogonal transformed coefficients between at  
7   least two blocks having a predetermined relationship with each other (See Inoue Col. 46 Lines 5-  
8   15) and making the coefficients satisfy a preset order of magnitude according to bit information  
9   specified as the digital watermark, so as to embed the information (See Inoue Col. 46 Lines 16-  
10   30); quantizing the coefficients obtained by the orthogonal transform with a quantization table  
11   (See Inoue Col. 46 Lines 9-18) and using the quantized coefficients to embed the bit information  
12   (See Inoue Col. 46 Lines 9-39), and output means that processes each block with the embedded  
13   bit information by inverse orthogonal transform, so as output a resulting image with digital  
14   watermark embedded therein (See Inoue Col. 46 Lines 30-39), but failed to specifically disclose  
15   wherein embedding the bit information is carried out when the quantized coefficients of the at  
16   least two blocks are not all equal to zero.

17           However, Inoue did disclose determining a mean, or the average, between coefficients  
18   (See Inoue Col. 46 Lines 16-30), which implies that the coefficients have values other than zero.  
19   It would have been obvious to the ordinary person skilled in the art at the time of invention to  
20   have embedded the bit information when the quantized coefficients of the at least two blocks  
21   were not all equal to zero. This would have been obvious because the ordinary person skilled in  
22   the art would have recognized that determining the mean of the quantized coefficients implies

1 that the coefficients were not all equal to zero. Further, Inoue does not gives no indication that  
2 the coefficients would all be equal to zero.

3  
4       Regarding claim 19, Inoue disclosed a recording medium in which a program for  
5 embedding a digital watermark in a master image is recorded in a computer readable manner(See  
6 Inoue Abstract and Figs. 12-14), said program causing a computer to attain the functions of:  
7 extracting blocks of a predetermined size from said master image (See Inoue Col. 45 Line 66 –  
8 Col. 46 Line 2); processing image data corresponding to each block by orthogonal transform  
9 (See Inoue Col. 46 Lines 2-5); comparing orthogonal transformed coefficients between at least  
10 two blocks having a predetermined relationship with each other (See Inoue Col. 46 Lines 5-15)  
11 and making the coefficients satisfy a preset order of magnitude according to bit information  
12 specified as the digital watermark, so as to embed the information (See Inoue Col. 46 Lines 16-  
13 30); quantizing the coefficients obtained by the orthogonal transform with a quantization table  
14 (See Inoue Col. 46 Lines 9-18) and using the quantized coefficients to embed the bit information  
15 (See Inoue Col. 46 Lines 9-39), and processing each block with the embedded bit information by  
16 inverse orthogonal transform, so as output a resulting image with digital watermark embedded  
17 therein (See Inoue Col. 46 Lines 30-39), but failed to specifically disclose wherein embedding  
18 the bit information is carried out when the quantized coefficients of the at least two blocks are  
19 not all equal to zero.

20       However, Inoue did disclose determining a mean, or the average, between coefficients  
21 (See Inoue Col. 46 Lines 16-30), which implies that the coefficients have values other than zero.  
22 It would have been obvious to the ordinary person skilled in the art at the time of invention to



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1 have embedded the bit information when the quantized coefficients of the at least two blocks  
2 were not all equal to zero. This would have been obvious because the ordinary person skilled in  
3 the art would have recognized that determining the mean of the quantized coefficients implies  
4 that the coefficients were not all equal to zero. Further, Inoue does not gives no indication that  
5 the coefficients would all be equal to zero.

6  
7 Regarding claim 13, Inoue disclosed a method of decoding a digital watermark from a  
8 master image with the digital watermark embedded therein (See Inoue Fourth Embodiment  
9 Beginning in Col. 48), said decoding method comprising the steps of: extracting blocks of a  
10 predetermined size from said master image (See Inoue Col. 48 Lines 54-62 and Col. 45 Line 66  
11 – Col. 46 Line 2); processing image data corresponding to each block by orthogonal transform  
12 (See Inoue Col. 48 Lines 54-62 and Col. 46 Lines 2-5); and comparing orthogonal transformed  
13 coefficients between at least two blocks having a predetermined relationship with each other  
14 (See Inoue Col. 49 Lines 28-31) and extracting bit information, based on a preset order of  
15 magnitude that is applied to the coefficients (See Inoue Col. 49 Lines 28-38).

16 Regarding claim 18, Inoue disclosed an apparatus of decoding a digital watermark from  
17 a master image with the digital watermark embedded therein (See Inoue Fourth Embodiment  
18 Beginning in Col. 48), said digital watermark decoding apparatus comprising: block extraction  
19 means that extracts blocks of a predetermined size from said master image (See Inoue Col. 48  
20 Lines 54-62 and Col. 45 Line 66 – Col. 46 Line 2); transformation means that processes image  
21 data corresponding to each block by orthogonal transform (See Inoue Col. 48 Lines 54-62 and  
22 Col. 46 Lines 2-5); and bit information extracting means that compares orthogonal transformed

1 coefficients between at least two blocks having a predetermined relationship with each other  
2 (See Inoue Col. 49 Lines 28-31) and extracting bit information, based on a preset order of  
3 magnitude that is applied to the coefficients (See Inoue Col. 49 Lines 28-38).

4       Regarding claim 20, Inoue disclosed a recording medium in which a program for  
5 decoding a digital watermark from a master image with a digital watermark embedded therein is  
6 recorded in a computer readable manner (See Inoue Fourth Embodiment Beginning in Col. 48),  
7 said program causing a computer to attain the functions of: extracting blocks of a predetermined  
8 size from said master image (See Inoue Col. 48 Lines 54-62 and Col. 45 Line 66 – Col. 46 Line  
9 2); processing image data corresponding to each block by orthogonal transform (See Inoue Col.  
10 48 Lines 54-62 and Col. 46 Lines 2-5); and comparing orthogonal transformed coefficients  
11 between at least two blocks having a predetermined relationship with each other (See Inoue Col.  
12 49 Lines 28-31) and extracting bit information, based on a preset order of magnitude that is  
13 applied to the coefficients (See Inoue Col. 49 Lines 28-38).

14       Regarding claims 2 and 14, Inoue disclosed that the predetermined relationship between  
15 the at least two blocks is an arrangement of contiguity (See Inoue Fig. 13).

16       Regarding claim 3, Inoue disclosed that the orthogonal transform is a discrete cosine  
17 transform (See Inoue Col. 6 Lines 4-7).

18       Regarding claim 7, Inoue disclosed introducing a logic function that is true when a  
19 difference between the orthogonal transformed coefficients of the at least two blocks having the  
20 predetermined relationship is in a preset range; and modifying a procedure adopted to embed the  
21 bit information, based on the true and false state of the logic function (See Inoue Col. 47 Lines  
22 32-36 and Col. 40 Lines 1-30).

1           Regarding claim 8, Inoue disclosed providing a secret key corresponding to each  
2   coefficient (See Inoue Col. 47 Lines 32-36 and Col. 40 Lines 1-30 Logical Value), and  
3   modifying the procedure adopted to embed the bit information, based on the secret key  
4   corresponding to each coefficient and the true and false state of the logic function with regard to  
5   the coefficient (See Inoue Col. 40 Lines 1-30).

6           Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue as  
7   applied to claims 4 and 13 above, and further in view of Vora (US Patent Number 6,463,162).

8           Inoue disclosed embedding data in the coefficients of discrete cosine transformed blocks  
9   (See Inoue Col. 46 Lines 1-39), but failed to disclose converting the image data into a system of  
10   a luminance Y and color differences Cb and Cr, prior to the orthogonal transform, and carrying  
11   out discrete cosine transform of the luminance Y and the color differences Cb and Cr as the  
12   orthogonal transform; and embedding the bit information in coefficients obtained by the discrete  
13   cosine transform of the luminance Y.

14          Vora teaches that in order to increase the space available for embedding, an image should  
15   be converted to the luminance-chrominance space prior to embedding, and the data should be  
16   embedded into both the luminance and chrominance elements (See Vora Col. 4 Lines 4-10).

17          It would have been obvious to the ordinary person skilled in the art at the time of  
18   invention to employ the teachings of Vora in the watermarking system of Inoue by converting  
19   the image to the luminance-chrominance space prior to watermarking, and marking both the  
20   luminance and chrominance elements. This would have been obvious because the ordinary  
21   person skilled in the art would have been motivated to increase the information content of the  
22   watermark.

1           Claims 9-10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue as  
2   applied to claim 1 above, and further in view of Johnson et al. (“Exploring Steganography:  
3   Seeing the Unseen”) hereinafter referred to as Johnson.

4           Inoue disclosed providing a basic pattern as information of the digital watermark (See  
5   Inoue Col. 4 Lines 30-33), specifying each piece of binary information included in the provided  
6   basic pattern as the bit information as the bit information to be embedded (See Inoue Col. 47  
7   Lines 32-34), and embedding the binary information of the basic pattern by setting the at least  
8   two blocks having the predetermined relationship to one unit (See Inoue Col. 47 Lines 34-47),  
9   and that embedding the basic pattern in the image data was done iteratively a predetermined  
10   number of times, when the number of elements constituting the basic pattern is greater than the  
11   number of extracted blocks (See Inoue Col. 47 Lines 48-57), but failed to disclose that the basic  
12   pattern was defined in a two-dimensional manner as a combination of binary information.

13          Johnson teaches that the data to be embedded in an image can be anything that could be  
14   embedded into a bit stream, including plain text, ciphertext, and other **images** (See Johnson Page  
15   27 Col. 2 Lines 1-3).

16          It would have been obvious to the ordinary person skilled in the art at the time of  
17   invention to have employed the teachings of Johnson in the watermarking system of Inoue by  
18   defining the watermark as an image. This would have been obvious because the ordinary person  
19   skilled in the art would have been motivated to hide an image in the signal.

20          Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue and  
21   Johnson as applied to claim 9 above, and further in view of Ohbuchi et al. (“Watermarking  
22   Three-Dimensional Polygonal Modals”), hereinafter referred to as Ohbuchi.

1 Inoue disclosed embedding information (See rejection of claim 9 above), but failed to  
2 disclose the information being a density pattern.

3 Ohbuchi teaches that density pattern embedding in polygonal models withstands  
4 practically every geometrical transformation attack (See Ohbuchi Page 271 Col. 1 Section 3.5).

5 It would have been obvious to the ordinary person skilled in the art to employ the  
6 teachings of Ohbuchi in the watermarking system of Inoue by using a density pattern as the  
7 watermark. This would have been obvious because the ordinary person skilled in the art would  
8 have been motivated to provide watermark protection to polygonal models as well as plain  
9 images.

10 Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue as applied  
11 to claim 13 above, and further in view of Rhoads (US Patent Number 6,122,403).

12 Inoue disclosed arranging the extracted bit information to restore the basic pattern; and  
13 decoding the digital watermark from the basic pattern (See Inoue Col. 50 Lines 10-15), but failed  
14 to disclose that the extracted information contained a repetitive pattern, or restoring such a  
15 pattern.

16 Rhoads teaches that when watermarking an image, the watermark size should be small  
17 and the mark should be repeated many times through the image (See Rhoads Col. 69 Paragraph  
18 1).

19 It would have been obvious to the ordinary person skilled in the art at the time of  
20 invention to employ the teachings of Rhoads in the watermarking system of Inoue by repeating  
21 the mark through the image multiple times. This would have been obvious because the ordinary

1 person skilled in the art would have been motivated to allow the watermark to be recovered from  
2 only a portion of the image.

3 ***Allowable Subject Matter***

4 Claims 7-8 are objected to as being dependent upon a rejected base claim, but would be  
5 allowable if rewritten in independent form including all of the limitations of the base claim and  
6 any intervening claims.

7 The following is a statement of reasons for the indication of allowable subject matter:

8 While the prior art taught watermarking methods and systems which compare orthogonally  
9 transformed coefficients of different blocks within an image, the prior art fails to teach or suggest  
10 the particular combination of limitations as claimed including modifying the data embedding  
11 procedure based upon whether or not difference between the orthogonal transformed coefficients  
12 of blocks is within a preset range.

13 ***Conclusion***

14 Claims 1-3, 5, and 9-20 have been rejected, while claims 7-8 have been objected to and  
15 claims 4 and 6 have been cancelled.

16 Any inquiry concerning this communication or earlier communications from the  
17 examiner should be directed to MATTHEW T. HENNING whose telephone number is  
18 (571)272-3790. The examiner can normally be reached on M-F 8-4.

19 If attempts to reach the examiner by telephone are unsuccessful, the examiner's  
20 supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the  
21 organization where this application or proceeding is assigned is 571-273-8300.

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1 Information regarding the status of an application may be obtained from the Patent  
2 Application Information Retrieval (PAIR) system. Status information for published applications  
3 may be obtained from either Private PAIR or Public PAIR. Status information for unpublished  
4 applications is available through Private PAIR only. For more information about the PAIR  
5 system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR  
6 system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would  
7 like assistance from a USPTO Customer Service Representative or access to the automated  
8 information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

9  
10 /Matthew T Henning/

11 Primary Examiner, Art Unit 2131